



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

UXO/Countermine Test Stand

Purpose

The unexploded ordnance (UXO)/countermine (CM) test stand was developed by the ERDC Environmental Laboratory to conduct accurate open-air evaluation of sensor systems used for UXO and mine detection applications. The test stand and auxiliary equipment provide the capability to collect high-fidelity, precise signal response data for use in UXO/CM discrimination model evaluation and verification.

Specifications

Test Stand: The test stand is constructed with non-conducting and nonmagnetic materials, and allows testing of common sensor modalities such as magnetics, electromagnetics, and radar. The test stand is 3 m (10 ft) high to base grating. The surface area of the test stand is 5.5 X 6.1 m (18 X 20 ft) with a nominal 4- X 4-m data acquisition grid area. XY positioning is automated and programmable, with millimeter accuracy. The test stand has a positioning information data stream for input into a sensor system's data port. Data streams can be recorded through hard-wired or wireless communication techniques.

Ordnance Holder and Target Positioning: The ordnance holder can accommodate ordnance ranging from 20 to 155 mm in diameter and up to 90 kg (200 lb). Mines, non-ordnance clutter, and/or background materials can also be accommodated on the test stand. The ordnance holder has automated vertical positioning, automated azimuth orientation, manual inclination orientation, and can be moved 1.25 m vertically, providing up to 2 m of interrogation depth.

Benefits

The test stand provides a revolutionary capability that enhances development and evaluation of new sensor systems and new discrimination algorithms. The test stand collects signatures on items in open air at multiple angles and distances. Compared to measurements produced in the field or in most laboratory situations, the test stand can produce a data set with greater measurement density and position repeatability.

Success Stories

The Department of Energy-Oak Ridge National Laboratory (DOE-ORNL), under SERDP and USACE sponsorship, used the ERDC test stand to conduct evaluation tests of a full-tensor magnetic gradiometer Super Conducting Quantum Interference Device (SQUID) that simulated helicopter and ground-based SQUID systems. Signatures of ordnance were collected as the position of the SQUID sensor changed relative to the position of the target. ORNL was pleased with ERDC operational support, the excellent, low-noise environment, and the flexible operational configurations. The data collected is being used to determine detection thresholds and survey tolerances for both the ground and airborne SQUID system configurations.

Point of Contact

Hollis "Jay" Bennett, CEERD-EE-C; Phone: 601-634-3924
E-mail: Jay.Bennett@usace.army.mil

